ATTACHMENT A

Remarks

By this Amendment, independent claims 1, 5, 21 and 27 have been amended to better define the invention. In addition, various dependent claims have been amended consistent with the amendments to the independent claims; and new dependent claims have been added to further claim the present invention. It is submitted that the present application is in condition for allowance for the following reasons.

In the *Claims Rejection – 35 USC § 103* section of the outstanding Office Action, all of the pending claims were rejected as being unpatentable over the Zimmerman patent in view of the newly cited Hisano patent. However, for the following reasons, it is submitted that amended independent claims 1, 5, 21 and 27, as well as the claims dependent therefrom, are all allowable over this combination of references.

In the amended independent claims, it is now particularly recited that the present invention is directed to a computer based interactive gaming invention. The term "inactive" is used to convey the idea that speed is needed for the recognition of the movements of the player (as by processing 30 times a second, as claimed in certain claims). Such a narrowing of the independent claims clearly shows that the present invention is not made obvious by the cited references as these do not relate in any manner to any computer based games, nor to the interactive speeds which would be required for such games.

In addition, the suggested combination is clearly not correct nor proper for the following reasons, so that the claims are additionally allowable for these reasons.

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In the Zimmerman patent, there is disclosed a computer data entry and manipulation apparatus including a glove assembly 12 electrically coupled via an electric cable 13 to an interface circuit 14. The interface circuit is in turn connected to a port of the associated computer having a display screen 28. The glove assembly contains sensors that detect flexing of the fingers of the user or other hand gestures. The glove assembly also includes one or more ultrasonic transducers 17 for transmitting signals to receivers 20 located around the display screen 28, so that the spatial position of the glove assembly 12 with respect to display screen 28 can be determined – so that the display screen can display a "graphical representation of the operator's hand" (as associated with the glove assembly) on the display screen. This determination is made by measuring a time delay between a transmission of an ultrasonic signal by the (each successive?) transducer 17 and a reception of the signal by receivers 20. These transducers also require a wire connection to the computer, for power as well as for an initiation signal (for the timing measurement to be made). In use, a virtual object is displayed on the display screen 28. The user's hand movements in the glove assembly as well as with the glove assembly control the movement of a cursor on the display screen 28 relative to the object displayed on the screen (such as a keyboard). Thus, typing or the like can be mimicked by the user relative to the displayed keyboard and position of the cursor thereon.

In what is obviously an improper hindsight reconstruction of the present invention, the examiner has attempted to add selective and narrow teachings of the Hisano patent. The Hisano patent discloses a system whose object is "to recognize three-dimensional objects". However, in the system of the Zimmerman patent, the

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object does not need to be recognized, as it is already known to be a glove. Therefore, as no "object recognition" as taught by the Hisano patent is needed in the Zimmerman patent, there is no motivation to combine the references - particularly at the time (1992) of the present invention! It is thus also evident that the suggestion for combining the Hisano patent with the Zimmerman patent is not proper and is merely an impermissible hindsight reconstruction.

In addition, the Hisano patent teaches that the two cameras must first obtain an initial set of images of the object to be recognized, and then the cameras must be moved to obtain a second set of images of the object from a displaced location (see column 5, lines 28+). This is a restricting condition for operation of the invention (see column 1, lines 59-62). Such a system is thus not usable in the system of the Zimmerman patent, since the cameras would not be mounted for movement as the sensors of the Zimmerman patent are attached to the screen. And it would not be obvious to mount the cameras for movement, since the invention of the Zimmerman patent would not be usable for following such movements as keystrokes as the cameras would not be able to move sufficiently quickly each time a keystroke measurement had to be taken. Such a system would also be unworkable for any interactive game, as claimed, as well.

The examiner also notes that the Hisano patent teaches the identification of points on the object. However, while the recognition of such points serves in recognizing the object as a whole, such a teaching is not equivalent to being able to monitor and determine a location in space of the point, much less the determination of the changing location in space of a point which is what is required by the Zimmerman patent. The

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"position" referred to in the Hisano patent is the relative positions of the feature points on the object, not in 3D space and certainly not for a moving object as would be the case for the glove of the Zimmerman patent. Thus, the combination of the Zimmerman patent and the Hisano patent suggested by the examiner would not even accomplish the objects of the Zimmerman patent; and hence would be a step back in the art and would additionally not be obvious for that reason.

The above point is also evidenced by the examiner's suggested "motivation" for the combination - that the "suggestion" in Hisano is that "the identification of a position of a point on an object ...satisfies the desired determination of <u>a position of a point on an object</u>" [emphasis added]. How this serves as a motivation for the combination is not understood. The principal Zimmerman patent is concerned with monitoring the "gestures, position and movement of the hand of the operator" (column 1, lines 55-56). There is nothing in the Hisano patent, including the noted "suggestion" above, which would teach one that the location of a feature <u>on</u> an object is usable for monitoring gestures, position and movement of a hand. This is especially true when it is properly considered that while the hand/glove of the Zimmerman patent would contain such features, and while such features could be "recognized" as such (so that the computer would then know it is looking at a glove), there is nothing in the Hisano patent that teaches measuring movement of the features relative to one another or in a 3D environment. As noted in *In re Kotzab*, 55 USPQ2 1313, 1317 (CAFC 2000),

> what ... would have been suggested to those of ordinary skill in the art ...
> must be considered in the context of the teaching of the entire reference.
> Further, a rejection cannot be predicated on the mere identification of
> individual components of claimed limitations. Rather, particular findings

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must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner suggested.

Given the disparate uses of the Zimmerman patent and the Hisano patent, it is apparent that the "suggestion" of the Hisano patent would offer nothing of benefit to the invention of the Zimmerman patent so that the "suggestion" does not properly serve as a motivation. Therefore, the combination asserted by the examiner is improper, and evidences merely a hindsight reconstruction of the present invention.

It will also be appreciated that the Zimmerman patent teaches that the glove is used to provide a "gesture sensing means coupled to the hand for detecting gesture specifying movements of the hand, such as flexing of the fingers ..." (column 2, lines 1-3), such as with sensors attached to the glove. Such a glove is obviously a key part of the invention of the Zimmerman patent, and there would be no invention in the Zimmerman patent without such a glove or the like. But such a glove would not be needed in the suggested combination if the system of the Hisano patent were capable of tracking movement sufficiently fast (which it is not, as noted separately). Thus, in the combination suggested by the examiner, a key part of the invention of the Zimmerman patent is wasted or not utilized, further emphasizing the improper combination of the references (destroying the underlying invention of the Zimmerman patent) and the hindsight reconstruction employed by the examiner. As recognized long ago by the court in *In re Ratti*, 123 USPQ 349 (CCPA 1959), the combination is improper where:

> the suggested combination of references would require a substantial reconstruction and redesign of the elements shown in the [primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate.

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Therefore, for all of the foregoing reasons, it is submitted that independent claims 1, 5, 21 and 27 are not made obvious by the combination of the Zimmerman patent and the Hisano patent so that these claims are all allowable. For these same reasons, it is submitted that the following dependent claims are also allowable: dependent claims 2-4 and 28-38 dependent on independent claim 1; dependent claims 7, 9-12, 15-18, 20, and 39-43 dependent on independent claim 5; dependent claims 22 and 44-50 dependent on independent claim 21; and dependent claims 51-61 dependent on independent claim 27.

In dependent claim 21, and dependent claims 3, 39 and 61, it is claimed that the present invention is implemented using only a single TV camera. As the Hisano patent clearly teaches the need for at least two TV cameras, it is submitted that these claims are additionally allowable for this reason.

It is noted that the examiner has cited the Knopp patent. However, as the Knopp patent is not prior art to this application, it has not been reviewed further.

For all of the foregoing reasons, it is submitted that the present application is in condition for allowance and such action is solicited.

ATTACHMENT B
Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1.   (currently amended) A method of ~~life-like~~ computer based interactive gaming ~~or simulation~~ comprising the steps of:

    providing a computer controlled display screen having an extensive surface;

    electro-optically determining, using at least one TV camera, a position of one or more points on a ~~user or an object~~game player;

    providing data input relative to the determined position to said computer; and

    controlling a displayed image provided on said screen with said computer in response to said determined position of said ~~user or object~~game player.

2.   (previously presented) A method according to claim 1, wherein said determining step is accomplished with more than one TV camera.

3.   (currently amended) A method according to claim ~~2~~1, wherein said determining step is accomplished with only one TV camera~~s are located proximate said display screen~~.

4.   (original) A method according to claim 1, wherein said displayed image is substantially lifesize.

5.   (currently amended) A method of interactive gaming ~~or simulation~~ comprising the steps of:

    providing a screen or other surface on which video images are displayed relating to a game being played;

    obtaining, using at least one TV camera, one or more images containing data concerning one or more objects used in said game~~ or simulation~~;

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from said image data, determining the location of one or more points on said one or more objects;

from said determined locations, determining at least one game parameter; and

using said game parameter, changing ~~an audio or~~ a video image displayed ~~characteristic of~~related to the game ~~or simulation~~.

6.   (canceled)

7.   (original) A method according to claim 5, wherein location of a point on an article of clothing worn by a person is determined.

8.   (canceled)

9.   (original) A method according to claim 5, wherein said screen is a projection TV screen.

10.   (original) A method according to claim 5, wherein said object is an artifact that humans use in gaming.

11.   (original) A method according to claim 5, wherein said screen is capable of withstanding severe impacts of commonly used sports gaming objects used for the games in question.

12.   (original) A method according to claim 5, wherein said display is viewed in 3-D by a user.

13.   (canceled)

14.   (canceled)

claims listing

15.   (original) A method according to claim 5, wherein said object is a projectile whose trajectory is determined.

16.   (original) A method according to claim 5, wherein the location of a player or portion thereof is continuously tracked, and varying video imagery is displayed as a result of locations determined.

17.   (original) A method according to claim 5, wherein data concerning location of points on both persons and objects used in the game are determined.

18.   (original) A method according to claim 5, wherein location of a point is determined in 3 dimensions.

19.   (canceled)

20.   (original) A method according to claim 5, wherein said point is of high contrast relative to its surroundings.

21.   (currently amended) A method of interactive gaming or simulation comprising the steps of:
        providing video images on a display screen or other surface on which video images are displayedwith which a player of a game interacts;
        obtaining, using at least onea single TV camera, one or more images containing data concerning one or more persons-playersing of said game or simulation, and objects used in said game or simulation;
        from said image data, determining the location of a-one or more points on said persons or objectsplayer at a rate of at least 30 times per second;
        from said determined locations, determining the relation of one or more points on said player or object-to the displayed image on the screen; and
        controlling the displayed image in accordance with said relation so determined.

claims listing

22.   (original) A method according to claim 21, wherein said object is an artifact that humans use in gaming.

23-26. (canceled)

27.   (currently amended) A method of interactive gaming ~~or simulation~~ comprising the steps of:

providing video images on a display screen ~~or other surface on~~ with which ~~video images are displayed~~ a player of a game interacts;

obtaining, using at least one TV camera, one or more images containing data concerning one or more ~~persons~~ play~~ing~~ersing of said game ~~or simulation~~, or of objects used in said game ~~or simulation~~;

from said image data, determining the location of one or more points on said persons or objects;

~~using~~ from said determined locations, determining the relation of one or more points on said player or object to the displayed image on the screen; and

controlling the displayed image in accordance with said relation so determined.

28.   (new) A method according to claim 1, wherein said one or more points is a group of points on a portion of the game player, and wherein said determining step additionally determines orientation of the portion of the player using the group of points.

29.   (new) A method according to claim 1, wherein said one or more points are of high contract.

30.   (new) A method according to claim 1, wherein said determining step is performed at a rate of at least 30 times per second.

31.   (new) A method according to claim 1, wherein said determining step determines position in three dimensions.

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32.   (new) A method according to claim 1, wherein said TV camera views light reflected from said one or more points.

33.   (new) A method according to claim 1, wherein said one or more points is recognized by color or shape.

34.   (new) A method according to claim 1, wherein said determining step also determines a position of points on an object.

35.   (new) A method according to claim 1, wherein said display screen has a three dimensional display.

36.   (new) A method according to claim 1, wherein said display screen is a projection display.

37.   (new) A method according to claim 1, wherein said determining step continuously determines the position of the one or more points, and wherein said controlling step also varies video imagery displayed on said screen as a result of the continuously determined positions.

38.   (new) A method according to claim 1, wherein said one or more points is located on the player's head, finger, hand or foot.

39.   (new) A method according to claim 5, wherein said determining step is accomplished with only one TV camera.

40.   (new) A method according to claim 5, wherein said TV camera views light reflected from said one or more points.

41.   (new) A method according to claim 5, wherein said one or more points is recognized by color or shape.

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42.   (new) A method according to claim 5, wherein said one or more points is a group of points on a portion of the game player, and wherein said determining step additionally determines orientation of the portion of the player using the group of points.

43.   (new) A method according to claim 5, wherein said determining step is performed at a rate of at least 30 times per second.

44.   (new) A method according to claim 21, wherein said one or more points is a group of points on a portion of the game player, and wherein said determining step additionally determines orientation of the portion of the player using the group of points.

45.   (new) A method according to claim 21, wherein said one or more points are of high contract.

46.   (new) A method according to claim 21, wherein said determining step determines position in three dimensions.

47.   (new) A method according to claim 21, wherein said TV camera views light reflected from said one or more points.

48.   (new) A method according to claim 21, wherein said one or more points is recognized by color or shape.

49.   (new) A method according to claim 21, wherein said display screen is a projection display.

50.   (new) A method according to claim 21, wherein said determining step continuously determines the position of the one or more points, and wherein said controlling step also varies video imagery displayed on said screen as a result of the continuously determined positions.

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51.   (new) A method according to claim 27, wherein said one or more points is a group of points on a portion of the game player, and wherein said determining step additionally determines orientation of the portion of the player using the group of points.

52.   (new) A method according to claim 27, wherein said one or more points are of high contract.

53.   (new) A method according to claim 27, wherein said determining step determines position in three dimensions.

54.   (new) A method according to claim 27, wherein said TV camera views light reflected from said one or more points.

55.   (new) A method according to claim 27, wherein said one or more points is recognized by color or shape.

56.   (new) A method according to claim 27, wherein said determining step is accomplished with only one TV camera.

57.   (new) A method according to claim 27, wherein said determining step also determines a position of points on an object.

58.   (new) A method according to claim 27, wherein said display screen has a three dimensional display.

59.   (new) A method according to claim 27, wherein said display screen is a projection display.

60.   (new) A method according to claim 27, wherein said determining step continuously determines the position of the one or more points, and wherein said

controlling step also varies video imagery displayed on said screen as a result of the continuously determined positions.

61.   (new) A method according to claim 27, wherein said determining step is performed at a rate of at least 30 times per second.

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